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(71) Applicant  
Georg Fischer Aktiengesellschaft,  
  
(Incorporated in Switzerland),  
CH-8201 Schaffhausen, Switzerland

(72) Inventors  
Alfred Thalmann,  
Kurt Zatti

(74) Agent and/or Address for Service  
Haseltine Lake & Co, Hazlitt House, 28 Southampton  
Buildings, Chancery Lane, London WC2A 1AT

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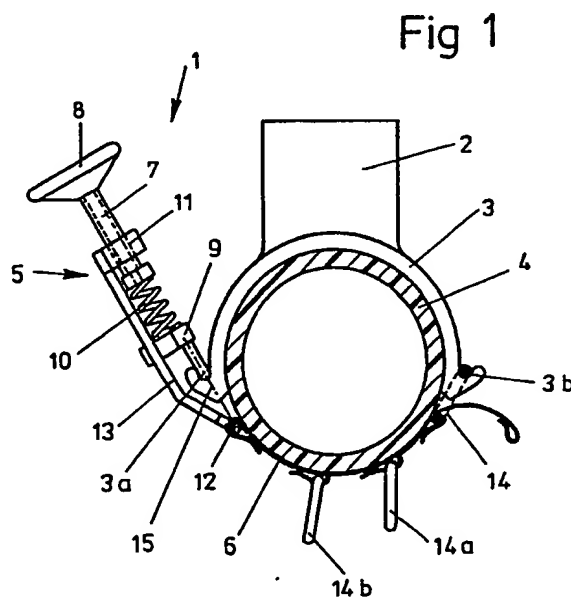
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(58) Field of search  
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F2P  
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Selected US specifications from IPC sub-class F16L

## (54) Welding clamp

(57) A plastics member 2 having a C-shaped part 3 is to be welded to a plastics pipe 4 whilst clamped to it by a clamping device 1. A part 9 of the device 1 is pressed by a spring 10 into a pocket 3a in the part 3 and towards a part 12 to which a clamping band 6 is fixed. A connecting member 14 is fixed to the band 6 and projects into a pocket 3b in the part 3. The spring pressure, controlled by a spindle 7, causes the part 3 to be pressed against the pipe around a portion of the periphery of the latter and the band 6 to be pressed against the pipe around a substantial portion of the periphery of the latter.



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Fig 1

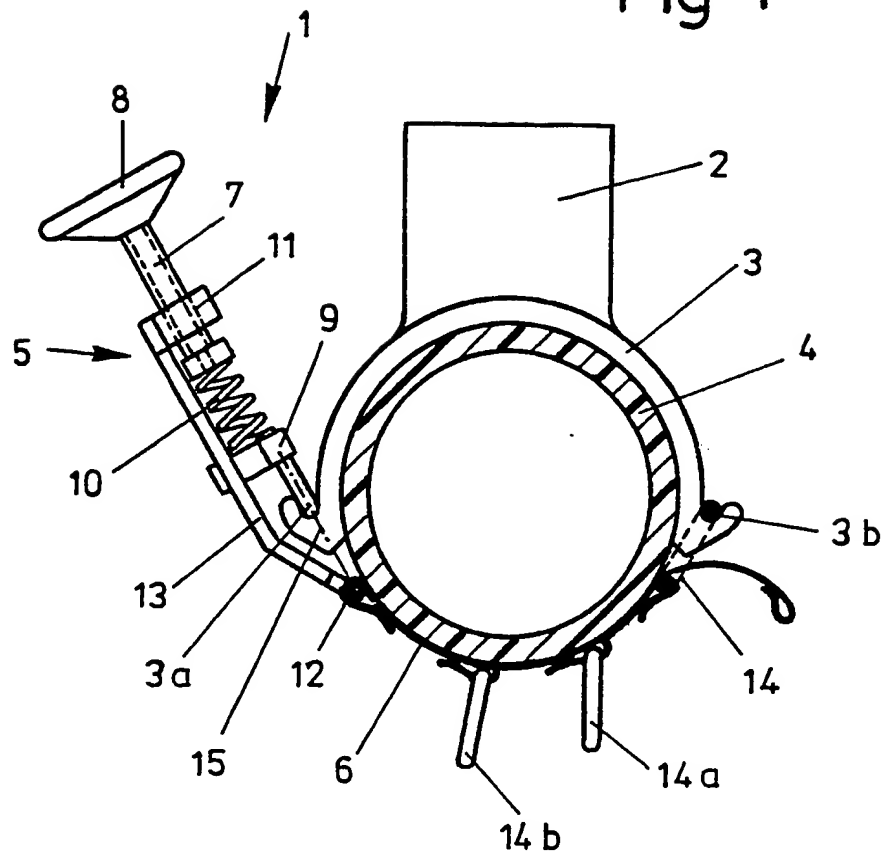
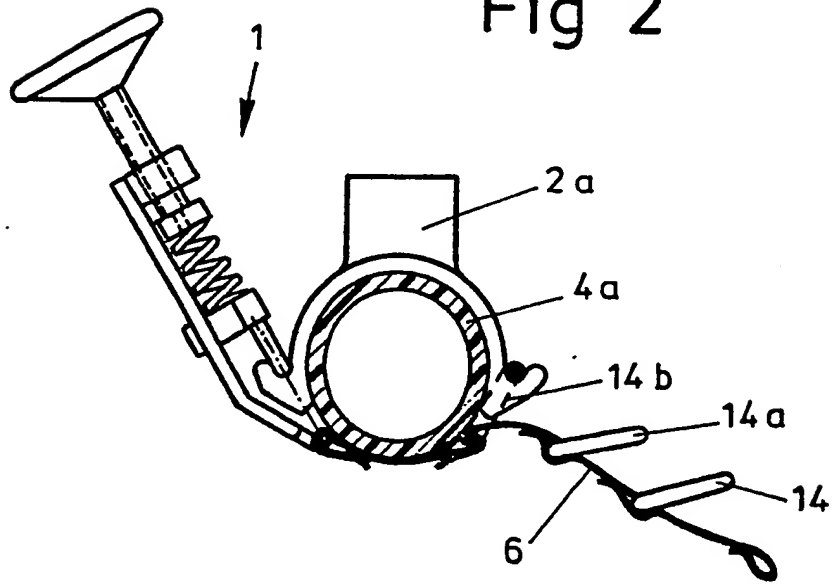


Fig 2



## SPECIFICATION

A device for clamping a plastics member to a plastics pipe whilst they are welded together

- 5 For the welding to pipes, made of plastics material, of "Anborschellen" (possibly boring pipe boxes, centering clamping rings or centering collars) which are also made of plastics material and which almost completely surround the pipe, a clamping device is known (Georg Fischer A.G.'s Catalogue No. FI 1169/1,2,4/8.83), comprising two parts both of which act directly on the member to be welded to the pipe. This clamping device is not suitable for plastics members which have a so-called "saddle" (the part which is pressed against the pipe) which extends much less than all the way, for example less than three quarters of the way, around the periphery of the pipe.
- 20 According to a first aspect of the invention, there is provided a clamping device which is suitable for clamping a member made of plastics material to a pipe made of plastics material whilst said member and pipe are being welded together, the clamping device including a first part for acting on one part of said member, a second part which has part of a clamping band connected to it, connecting means for connecting another part of the clamping band to another part of said member and urging means for urging one of the first and second parts to move with respect to the other, with the result, if said member has an appropriate shape and size and the pipe has an appropriate diameter, that the clamping band is tensioned and directly contacts and presses against the pipe around a substantial portion of its periphery and said member presses against the pipe around another substantial portion of its periphery.
- 40 In order that the clamping device may be used with pipes of differing diameters, more particularly with a number of differing standard pipes, and with differing members to be welded to similar or differing pipes (a) there may be another clamping band which can be incorporated in the device in place of the first-mentioned clamping band to provide a greater or lesser length of band between said second part and said connecting means or (b) there may be a plurality of connecting means spaced apart along the band and the appropriate connecting means, according to the shape and dimensions of the plastics member and the diameter of the pipe, can then be selected for use, the other or others not being used or (c) the length of band between said second part thereof and said connecting means may be adjustable.
- 55 According to a second aspect of the invention, there is provided an assembly of a pipe made of plastics material, a member made of plastics material which is to be welded to the pipe and a clamping device according to the first aspect of the invention, the band being tensioned and in direct contact with and pressing against the pipe around a substantial portion of its periphery and said member being pressed against the pipe around another substantial portion of its periphery.
- 65 Examples in accordance with the invention are

described below with reference to the accompanying drawings in which:-

Figure 1 shows a plastics member clamped to a plastics pipe by a clamping device, and

- 70 Figure 2 shows a different plastics member clamped by identical clamping device to a plastics pipe of lesser diameter.

Figures 1 and 2 show pipes 4 and 4a to which members 2 and 2a, respectively, are to be welded, all these parts being made of plastics material and the parts 4a and 2a being smaller than the parts 4 and 2. For the welding operation the members 2 and 2a are clamped to the pipe by identical clamping devices 1.

- The members 2 and 2a include so-called "saddles" 3 which are substantially C-shaped, the inner diameters of the saddles being approximately the same as the external diameters of the pipes to which they are welded. The saddles are to make contact with the pipes and be pressed against them around more than half but less than three-quarters of the peripheries of the pipes. The two ends of the C in each case extend outwardly and backwardly to provide pockets 3a and 3b in the form of grooves which extend along the length (perpendicular to the plane of the paper) of the saddle.

- The clamping device consists of a first part 9 which acts directly on one end of the saddle by projecting into the pocket 3a and pushing on the end of the C and urging it towards a second part 12 which is a connection for one end of a clamping band 6. The part 12 is at the lower end of an arm 13 in which is a slot into which projects a portion of the part 9 so that the part 9 can travel up and down the arm 13, guided by the slot. An internally screw-threaded part 11 is fixed to the upper end of the arm 13 and into it is screwed a screw-threaded spindle 7 which has an operating knob 8 at one end and engages at its other end one end of a compression spring 10 which exerts a force, adjustable by turning the spindle 7, on the part 9 and thus on the near end of the saddle. There could be two or more springs and spindles, spaced apart along the saddle. The assembly of parts 7 to 13 is designated 5 in the drawing.

- One end of the band 6 is formed with an eyelet 110 which co-operates with the part 12 to secure the band to the assembly 5 and a similar eyelet is formed at the other end of the band. There are also three more eyelets attached to the band, each of them holding a hoop-like connecting member 14, 14a or 14b one of which, according to the dimensions of the pipe and the saddle, can be swung upwardly to project into the pocket 3b. In Figure 1 it is the connecting member 14 and in Figure 2 it is the connecting member 14b which is effective in this way, the others not being used. Upon turning of the spindle or spindles 7 the parts 9 and 12 of the clamping device are forced closer together by the spring or springs 10 and the band 6 is tensioned and directly contacts and presses against the pipe around most of that part of the periphery of the pipe which is not in contact with and pressed against by the saddle.

- The line of application of the force exerted on the part 9 by the spring or springs 10 passes through the centre of the connection between the part 12 and the band and is substantially parallel to a plane which

is tangential to the pipe at the part of the pipe nearest the part 12, being spaced from that plane by the radius of the eyelet engaging the part 12. Both ends of the C are acted upon by substantially tangential forces.

One band 6 as illustrated in Figures 1 and 2 may be used for one particular member 2 and pipes with diameters of 63, 90 and 125 mm. and another and longer band 6 may be used for the same member 2 and pipes with diameters of 180, 250 and 315 mm.. Alternatively, for these pipe sizes there may be six differing bands 6, each with the appropriate length and with the connecting member 14 but not the connecting members 14a and 14b.

## CLAIMS

1. A clamping device which is suitable for clamping a member made of plastics material to a pipe made of plastics material whilst said member and pipe are being welded together, the clamping device including a first part for acting on one part of said member, a second part which has part of a clamping band connected to it, connecting means for connecting another part of the clamping band to another part of said member and urging means for urging one of the first and second parts to move with respect to the other, with the result, if said member has an appropriate shape and size and the pipe has an appropriate diameter, that the clamping band is tensioned and directly contacts and presses against the pipe around a substantial portion of its periphery and said member presses against the pipe around another substantial portion of its periphery.

2. Apparatus including a device according to claim 1 and another clamping band which can be incorporated in said device in place of the clamping band mentioned in claim 1 to provide a greater or lesser length of band between said second part and said connecting means so that the device can be used with pipes of greater or lesser diameter.

3. A device according to claim 1 in which there are provided on the clamping band a plurality of connecting means spaced apart along the band so that the same band can be used with pipes of differing diameters.

4. A device according to claim 1 in which the length of band between said second part and said connecting means is adjustable.

5. A device according to claim 1, 3, 4 or 5 in which the line of application of a force exerted on the first part of said device by the urging means passes through the centre of the connection between the second part and the clamping band.

6. A device according to claim 5 in which said line of application is substantially parallel to a plane which is tangential to the pipe at the part of said pipe nearest said connection.

7. A device according to claim 1 or any one of claims 3 to 6 in which the urging means includes a compression spring one end of which presses on said first part, an internally screw-threaded part fixed to the second part and a screw-threaded spindle screwed into the internally screw-threaded part and engaging the other end of the spring.

8. A clamping device which is suitable for clamping a member made of plastics material to a pipe made of plastics material whilst said member and pipe are being welded together, the clamping device being substantially as described above with reference to the accompanying drawing.

9. A clamping device according to claim 1 or any one of claims 3 to 8 in which said connecting means or each said connecting means consists of a hoop-like connecting member held by an eyelet on the clamping band.

10. An assembly of a pipe made of plastics material, a member made of plastics material which is to be welded to the pipe and a clamping device according to claim 1 or any one of claims 3 to 9, the band being tensioned and in direct contact with and pressing against the pipe around a substantial portion of its periphery and said member being pressed against the pipe around another substantial portion of its periphery.

11. An assembly according to claim 10 in which said member has a substantially C-shaped part which is pressed against the pipe, one end of the C extending outwardly and backwardly to provide a pocket into which said first part of the clamping device projects, said first part pushing on said one end of the C and urging it towards the second part of the clamping device.

12. An assembly according to claim 10 in which said member has a substantially C-shaped part which is pressed against the pipe, one end of the C extending outwardly and backwardly to provide a pocket for reception of said connecting means.

13. An assembly of a pipe, a member which is to be welded to the pipe and a clamping device, substantially as described above with reference to Figure 1 or Figure 2 of the accompanying drawing.